

IUBMB Enzyme Nomenclature**EC 2.5.1.32**

Common name: geranylgeranyl-diphosphate geranylgeranyltransferase

Reaction: 2 geranylgeranyl diphosphate = diphosphate + prephytoene diphosphate

For reaction pathway [click here](#).

Other name(s): prephytoene-diphosphate synthase; phytoene synthase; phytoene synthetase

Systematic name: geranylgeranyl-diphosphate:geranylgeranyl-diphosphate geranylgeranyltransferase

Links to other databases: [BRENDA](#), [EXPASY](#), [KEGG](#), [WIT](#), CAS registry number: 57219-66-6 and 50936-61-3

References:

1. Gregoris, D.E. and Rilling, H.C. The stereochemistry of *trans*-phytoene synthesis. Some observations on lycopersene as a carotene precursor and a mechanism for the synthesis of *cis*- and *trans*-phytoene. *Biochemistry* 13 (1974) 1538-1542. [Medline UI: [74133855](#)]
2. Maudinas, B., Bucholtz, M.L., Papastefanou, C., Katigar, S.S., Bredis, A.V. and Porter, J.W. Adenosine 5'-triphosphate stimulation of the activity of a partially purified phytoene synthetase complex. *Biochem. Biophys. Res. Commun.* 66 (1975) 430-436. [Medline UI: [76018524](#)]

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IUBMB Enzyme Nomenclature**EC 1.14.99.30**

Common name: carotene 7,8-desaturase

Reaction: neurosporene + AH₂ + O₂ = lycopene + A + 2 H₂O

For reaction pathway [click here](#).

Other name(s): ζ -carotene desaturase

Systematic name: carotene, hydrogen-donor:oxygen oxidoreductase.

Comments: also acts on ζ -carotene twice to give lycopene and converts β -zeacarotene to γ -carotene, and pro- ζ -carotene to prolycopene (via double reaction)

Links to other databases: [BRENDA](#), [EXPASY](#), [KEGG](#), [WIT](#), CAS registry number: 115300-02-2 (171716-20-4, 154768-69-1 and 184853-38-1)

References:

1. Albrecht, M., Linden, H. and Sandmann, G. Biochemical characterization of purified ζ -carotene desaturase from *Anabaena* PCC 7120 after expression in *E. coli*. *Eur. J. Biochem.* 236 (1996) 115-120. [Medline UI: [96184887](#)]

[EC 1.14.99.30 created 1999]

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